

**Central Pacific Transcontinental Railroad, Tunnel 41  
(Summit Tunnel)  
("The Big Hole")  
Southern Pacific Donner Pass Route Tunnels  
Milepost 193.3  
Donner Pass  
Placer County  
California**

**HAER No. CA-215**

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**PHOTOGRAPHS**

**WRITTEN HISTORICAL AND DESCRIPTIVE DATA**

**Historic American Engineering Record  
National Park Service  
Western Region  
Department of the Interior  
San Francisco, CA 94107**

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## HISTORIC AMERICAN ENGINEERING RECORD

### CENTRAL PACIFIC TRANSCONTINENTAL RAILROAD, TUNNEL 41 (Summit Tunnel) ("The Big Hole")

HAER No. CA-215

**Location:** Southern Pacific Donner Pass Route Tunnels  
Milepost 193.3 at Donner Pass, Norden vicinity, Placer County,  
California.

UTM: 10-729855-4354245  
Quad: Norden, Calif. 7.5', 1955 (photorevised 1979)  
(west portal)

UTM: 10-732925-4353470  
Quad: Norden, Calif. 7.5', 1955 (photorevised 1979)  
(east portal)

**Date of Construction:** 1925.

**Engineer:** Southern Pacific Railroad Engineering Department.

**Present Owner:** Union Pacific Railroad, 1416 Dodge Street, Omaha NE 68101.

**Present Use:** Railroad Tunnel.

**Significance:** The Central Pacific First Transcontinental Railroad is a segment of the western half of the first transcontinental railroad, built from Sacramento, California to Promontory Summit, Utah between 1863 and 1869, where it joined the Union Pacific Railroad which had built west from Omaha. For the purpose of the current project, the first transcontinental railroad was found likely to be eligible for the National Register of Historic Places at the national level of significance under Criterion A for its significance in transportation history, in uniting the East and the West, and in the development of the West. The railroad's period of significance is 1869 to 1945, from the line's completion in 1869, through the years of its role in the settlement and development of the West, to the conclusion of the railroad's achievements in World War II. Tunnel 41 is a contributive element of this historic property.

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## **I. DESCRIPTION**

Tunnel 41 is a 10,326-foot single track railroad tunnel (the second track entering the snowshed at the west end of the tunnel switches over to the single mainline track within the snowshed), with reinforced concrete portals and wingwalls. Snowshed 29, 900 feet of mostly timber snowshed and virtually the last of its type on the line, protects the west portal of the tunnel; Snowshed 33, 267 feet of prefabricated concrete panels with roof carried on steel girders, protects the east portal. The tunnel is on a tangent (no curve) alignment, and carries the tracks of the Union Pacific Railroad's (formerly Southern Pacific) Donner Pass line.

## **II. HISTORICAL INFORMATION**

The Southern Pacific Railroad built Tunnel 41 in 1925 as an element of the reconstruction and double-tracking of the original Central Pacific line between Blue Cañon and Truckee. [For a full history of this line and of this undertaking, see the documentation set for the Central Pacific Transcontinental Railroad (Southern Pacific Overland Route) (Southern Pacific Donner Pass Route), Southern Pacific Donner Pass Route Tunnels, HAER No. CA-196.] After assuming control of the Southern Pacific/Central Pacific and merging them with the Union Pacific in 1901, Edward H. Harriman had embarked on a series of huge reconstruction projects system-wide. One of these was the double-tracking of the original Central Pacific line over Donner Pass, the first segment of which was from Rocklin to Colfax, completed in 1911; the second phase, from Colfax to Blue Cañon, opened on December 10, 1914. The federalization of the nation's railroads during World War I, coupled with government litigation aimed at dissolving the Harriman merger and forcing Southern Pacific to give up the Central Pacific, delayed completion of the third phase until the mid-1920s.

This last phase of double-tracking over "The Hill" included the construction of eight tunnels, including Tunnel 41. All were in virtually solid granite; all were in the area of heaviest snowfall on the line; all posed the same construction problems that had faced Central Pacific crews sixty years earlier. Only now the construction crews had the advantage of heavy mechanized equipment. The railroad had explored the idea of a tunnel under the summit at least as far back as 1901, when it considered a truly gargantuan bore six miles in length. One can only imagine the problems this would have posed for engine crews, particularly those on locomotives behind the lead helper engine, in a six-mile long bore filled with hot smoke and exhaust gasses. In fact, it was just this problem in the existing tunnels that had led Southern Pacific, as locomotives grew ever larger, to develop the cab-forward locomotive that became its trademark in the pre-diesel days. Made possible by Southern Pacific's use of oil fuel, this design placed the crew ahead of the smokestack, and improved visibility as well.

In the event, the "Big Hole" (as the Summit Tunnel came to be called by railroad crews) was still a mammoth undertaking: a two-mile bore through virtually solid granite under Mount Judah. Modern machinery--air drills, steam shovels, and the like--and modern explosives made this construction possible where it had not been so for the Chinese construction crews of the Central Pacific sixty years before. Though the original Central Pacific line remained in service as one

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half of the double-track line, the straight line of Tunnel 41 avoided both the curved alignment of the original line that hugged the steep slopes above Donner Lake in its descent toward Truckee, as well as the phenomenal snows of the summit.

Interestingly, during the construction phase of the eight tunnels between Blue Cañon and Truckee, Fox Studios approached Southern Pacific seeking locations for a motion picture about the construction of the Central Pacific; among the locations used were the tunnels then under construction for the second track, since "...the rock is just as hard and jagged as it was in the early days...."

At about the same time, and in connection with increased passenger traffic, Southern Pacific acquired the narrow-gauge Lake Tahoe Railway which ran from Truckee to Tahoe City, and standard-gauged the line, offering through Pullman service to Lake Tahoe. The same year--1925--that saw completion of double-tracking of the Donner Pass line begun almost two decades earlier, also saw the company open major new depots on this line at Sacramento and Reno, as well as elsewhere on the system. Southern Pacific was ready to handle all the traffic--both passenger and freight--imaginable with its fully signalized, double-track line. And four years away lay the Great Depression.

### III. SOURCES

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#### **IV. PROJECT INFORMATION**

As a result of the 1996 merger of the Union Pacific and Southern Pacific Railroads, a federal undertaking under the jurisdiction of the Surface Transportation Board of the U.S. Department of Transportation, and in order to accommodate freight trains utilizing longer and taller cars and loads--tri-level auto rack cars and cars carrying double-stacked containers, the Union Pacific will need to increase tunnel clearances on the former Southern Pacific Donner Pass Route. The tunnels, built between 1868 and 1925, are contributing elements of the National Register-eligible Southern Pacific Donner Pass Route Tunnels Historic District. All tunnels have been laser-measured and the railroad will determine clearance needs on a tunnel-by-tunnel basis. Some, because of curved alignment, will require interior work to allow for longer cars such as tri-level auto rack cars; others, including Tunnel 41, will require both interior and portal work to provide sufficient vertical clearance for "double-stack" container cars. The latter work may impact the character-defining tunnel portals if crown mining of the tunnels (as opposed to lowering the tunnel floors) is selected. Inasmuch as this would cause an adverse effect to the tunnels, Union Pacific has elected to record the tunnels for the Historic American Engineering Record. Documentation was carried out by P.S. Preservation Services, John Snyder Field Director and Historian, and Ed Andersen, Photographer. Photos were made in October 1997, and research was carried out from August 1997 through March 1998.